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## **SERVICE MANUAL 5796-B**

### **INSTALLATION AND MAINTENANCE**

# **MODEL 50B RETARDERS**

**WITH**

## **PNEUMATIC PILOT CHECK VALVES**

**(For Models Furnished After 6/1/79 x451016-5601)**

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**UNION SWITCH & SIGNAL DIVISION**  
AMERICAN STANDARD INC / PITTSBURGH, PA 15237





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TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
I	INTRODUCTION	2
II	DESCRIPTION AND OPERATION	2
III	INSTALLATION	5
	3.1 SPECIAL TOOLS	5
	3.2 INSTALLATION PROCEDURES	5
IV	MAINTENANCE	7
	4.1 OPERATIONAL PROBLEMS AND POSSIBLE CAUSES	7
	4.2 ROUTINE MAINTENANCE	8
	4.2.1 Hydraulic Fluid	8
	4.2.2 Adjustment, Brake Shoe	8
	4.2.3 Adjustment, Retarder	8
	4.2.4 4-Way Valves	9
	4.2.5 General	9
V	SPECIAL TOOLS	37
	5.1 LIST OF TOOLS	37
	5.2 USE	37
VI	PARTS LIST	37
	APPENDAGE	40



## SECTION I INTRODUCTION

The Model 50B Air Assist car retarder has been developed by Union Switch & Signal to fulfill the need for an inexpensive, fast acting operable weight responsive retarder capable of handling 160 ton cars.

## SECTION II DESCRIPTION AND OPERATION

The Model 50B retarder applies a braking force to car wheels that is directly proportional to the weight of the car being retarded and, therefore, if all other conditions are the same, removes approximately the same velocity head from all cars irrespective of weight.

The basic retarder consists essentially of a retarder unit and a unitized control system. The control system provides the means for operating the retarder unit to the open or closed position to apply full retardation or no retardation as desired (see Figure 1).

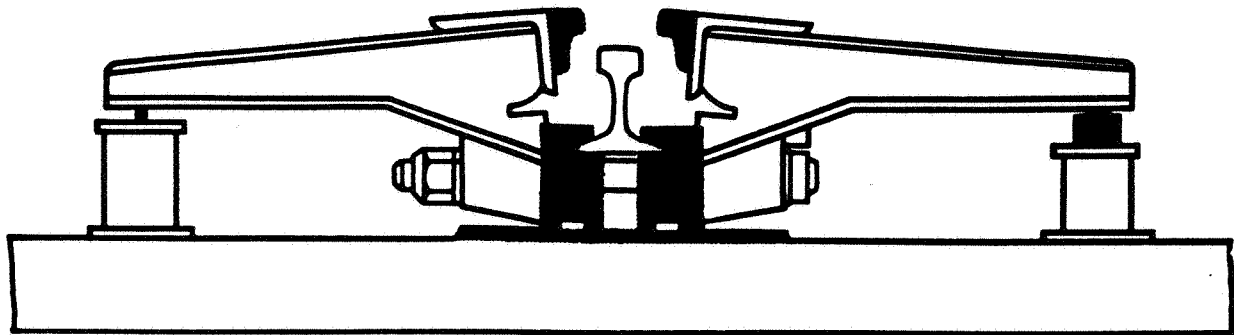
The retarder unit comprises two steel lever arms that are tie mounted on opposite sides of the running rail. The inner ends of the lever arms are connected together by a through bolt that passes through the arms and a pair of brackets that engage and support the running rail. The outer ends of the lever arms are pivotally supported by the tie-mounted stool on one side and on the other side by the piston of the hydraulic ram. Brake beams and shoes are bolted to the lever arms on either side of the running rails.

Stabilizer beams are provided within the retarder to maintain proper position and gage of the running rail.

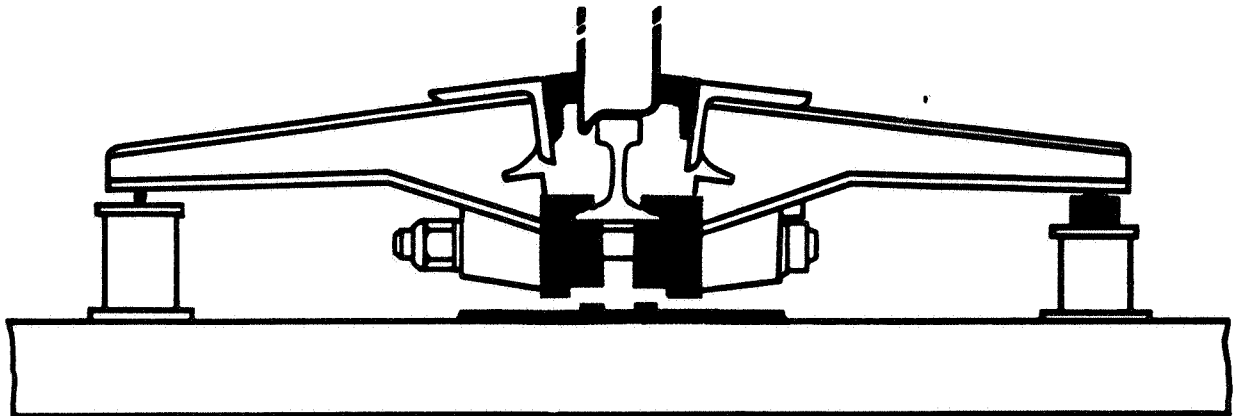
The control system of the Model 50B retarder is illustrated in Figure 2. This system is hydraulically-actuated, pneumatically powered and electrically controlled. A 4-way single solenoid pilot operated air valve, located in the valve box, permits air to pass to the accumulator and the pilot check valve. Pressure in the accumulator forces hydraulic fluid through the pneumatically operated pilot check-valve into the ram, raising the ram to the normal closed retarder position (see A, Figure 1).

When it is desired to release or open the retarder, the 4-way air valve solenoid is energized (see Figure 2). This action exhausts air to atmosphere, thus removing air pressure from the accumulator, and at the same applies air pressure to the pilot check valve, opening a path to permit a return flow of hydraulic fluid back into the accumulator. As the hydraulic fluid returns to the accumulator, the ram is lowered to open the retarder (see C, Figure 1).

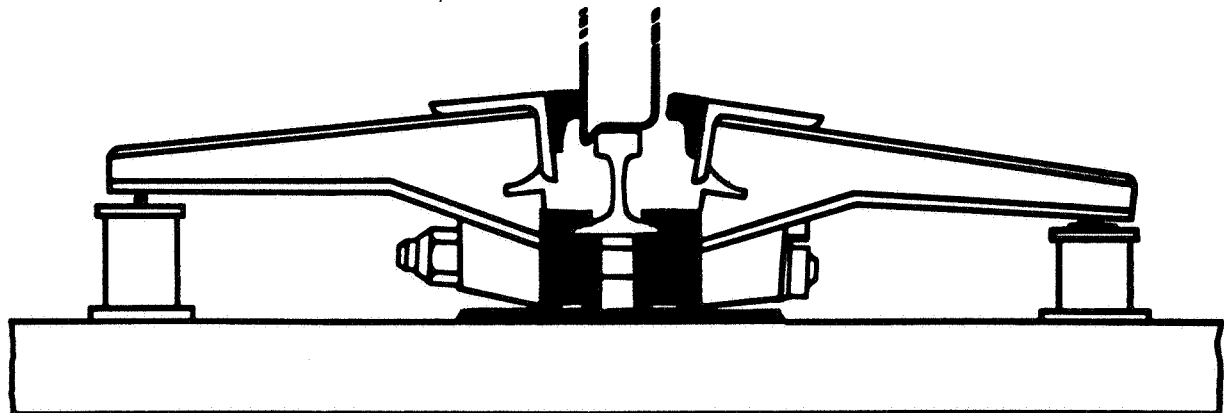


**A**

**NORMAL POSITION. Retarder Closed—No Car Present.** Ram is extended to close retarder. Retarder rests on tie plate.

**B**

**RETARDING POSITION. Retarder Closed—Car Present.** Ram is extended. Brake shoes are spread by the car wheel, causing the retarder to rise from the tie plate. The heavier the car, the greater the retarding force exerted.

**C**

**OPEN POSITION. Retarder Open—Car Present.** Hydraulic pressure is removed, the ram is lowered, the outside brake shoe is withdrawn, and the retarder rests on the tie plate.

**Figure 1. Model 50B Retarder Operation**

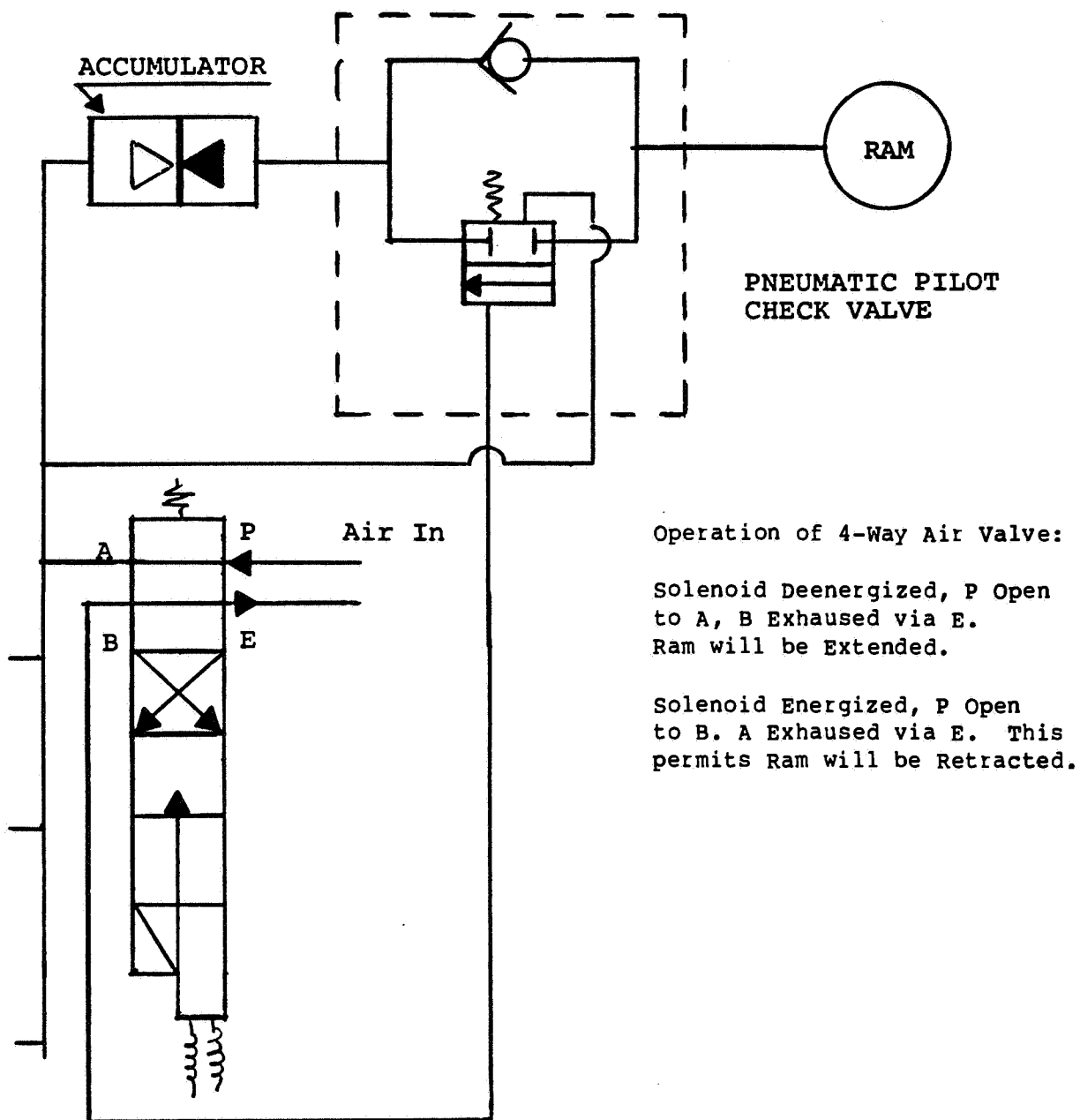


Figure 2. Control Diagram

Table I. Special Tools (X451016-0803)

<u>Part Number</u>	<u>Description</u>
M451017-6501	Gage, Brake Shoe
J397056	Wrench, Adjustable Spanner
N451017-6601	Pump, Hydarulic Hand
J397057	Wrench, 3-1/2 Hex Box
J397055	Wrench, Ratchet
J397058	Socket, 3-1/2 Hex



### SECTION III INSTALLATION

#### 3.1 SPECIAL TOOLS

Table I lists the special tools supplied with the Model 50B retarder. These tools are required to perform the various functions described in the following procedures.

#### 3.2 INSTALLATION PROCEDURES

The following is a step-by-step guide for the installation of a 5-lever Model 50B Retarder. The retarder described is installed using 131 or 132 lb. A.R.E.A. running rail. Installation of any other configuration of Model 50B Retarder will be similar to the extent that viewing the appropriate general drawing will make applicable modifications to this procedure readily apparent.

Consider X451016-5601 a 5-lever Model 50B Retarder.

1. Drill ties per C9457, Sheets 33 and 34, as needed (see "Tie Schedule" for each application). Be sure to arrange for and attach oak filler blocks as shown on Figure 5, Section "A-A". Method used and parts to accomplish attachment of oak filler block is to be supplied by customer.
2. Affix retarder parts (rail support, item 5; base plate, item 85; and stool, item 25) to ties. See Figures 6, 7, 8 and 10.
3. Later in this procedure, item 30 "bolt" and item 40 "2-1/4" elastic stop nut", Figures 6, 7, 8 and 10 will be put into place. Now proceed per the following in preparation for that time:

The 2-1/4" Elastic Stop Nut will, of course, spin on easily up to the point when the bolt engages with the nylon insert. To avoid undue difficulty later, it is recommended that each elastic stop nut be well greased and then screwed fully onto some piece threaded 2-1/4" - 4-1/2" and removed prior to their assembly in the retarder. Any handy bolt M451017-1102 can be used for this purpose.

4. Assemble manifolds per Figures 5, View "Y" or "Z", Detail "D" or "E" and also Figures 6, 7, 8 and 10.
5. Assemble brake shoes to brake beams (see Figure 5, View "Y" or "Z").
6. Dig out or prepare roadbed such that top of retarder ties will lie 16 inches below the desired level of the top of the running rail, i.e., if retarder is being placed into existing tracks, a hole 17' - 6" long by 14" wide and about 26" deep (depth measured from top of existing running rail) need be dug. (If existing ballast is not solid, dig down to a level 30" to 36" below top of running rail and back fill with ballast of 1" minimum diameter to 26" level.



7. Attach accumulator/ram assembly N451388-2701 to Ram Mounting Plate. See Section "A-A", Figures 6, 7, 8 and 10.
8. Prepare running rail to lever bearing system as follows:
  - (a) For each Figure 6 and 8 lever and tie assembly install shims, item 145 as required per the tabulation for the applicable rail size. (Note: Quantities of shims varies with different rail sizes.) Retain shims in place with washer, item 150 and nut, item 155.

NOTE

The brake shoe adjustment should be checked by gauges as described in paragraph 4.2.2 of this manual before placing the retarder into service. It may be necessary to add or subtract shims at that time to achieve proper adjustment.

9. Slip "Sleeves" M451017-2206 into place in levers as needed. See Figures 6, 7, 8 and 10. Oil or grease sleeves before inserting.

As manpower allows, Steps 2, 3, 4, 5, 6, 7, 8 and 9 can be completed concurrently.

10. Lay ties as prepared in Step 2 in place on 37-1/2" center. Align rail supports so the centerline of the running rail will be offset 9/16" from the centerline of the rail supports (see Figure 5, Section "AA").
11. Lay and attach valve box, tie strap and manifolds into place on ties.
12. Now put levers as prepared in Step 8 in place on the ties.
13. Apply an extreme pressure type, molybdenum disulfide grease to each "Washer" J475114-0101, see Figure 6, 7, 8 and 10, Item 35. Put "Bolt", "Washers" and "Elastic Stop Nut" in place.
14. Put assembly as prepared in Step 7 into place and attach to levers; Figure 6, 7, 8 and 10.
15. Attach brake beam assembly as prepared in Step 5 to levers. See Figure 5, View "Y" or "Z".
16. Lay running rails and guard rails and spike in place. See Figure 5, for location of ties with respect to guard and running rails before spiking.

NOTE

For 12 feet on either end of retarder, on retarder side of track, drive spikes such that 1/2" - 3/4" gap exists between rail and underside of spike head.



17. Make air connections between the manifolds and ram/accumulator packages.
18. Install stabilizer beams (see Figure 5, Detail "B"). Check to insure that proper rail gauge is maintained.
19. Install rail anchors of appropriate size on the retarder side of the track for a distance of approximately 25 feet on both entry and leaving ends of the retarder.
20. Fill in additional ballast and tamp ties solidly, being especially sure to have solid bed in the area under the hydraulic rams and in the area under the stools.
21. As soon as the air and electrical inputs to the valve box are connected, the retarder can be cycled to check out the hydraulic and pneumatic systems.
22. Adjust retarder for brake shoe clearance as outlined in paragraphs 4.2.2 and 4.2.3.
23. Retarder is now ready for operation.

#### SECTION IV MAINTENANCE

##### 4.1 OPERATIONAL PROBLEMS AND POSSIBLE CAUSES

If retarder fails to remove rated velocity head, check the following items:

1. One or more rams spongy in retard mode of operation.
  - a. May need hydraulic fluid.
  - b. Hydraulic system may contain entrapped air.
  - c. May have defective pilot check valve.
2. Check for incorrect brake shoe gap.
3. Brake shoe may have grease or paint build-up.

If lifting of a car wheel should occur within the retarder, the following points should be checked.

1. Defective pilot check valve.
2. Brake shoe gap incorrect.
3. Lifting is often caused by bad wheels -- if possible check lifting wheel for heavy bead on tread edge, or broken flange.



## 4.2 ROUTINE MAINTENANCE

### 4.2.1 Hydraulic Fluid

To add hydraulic fluid to the hydraulic system, proceed as follows:

1. Fully open retarder. This can be accomplished by pulling the levers down, using a bar positioned between the running rail and brake shoe. Pull levers down as far as possible (retarder must be opened such that 6" gap exists between brake shoes).
2. Connect oil transfer system (oil pump) into quick disconnect connection. (Hydraulic system is supplied filled with Mobil Aero HFA oil conforming to MIL-H-5606. Any oil put into a system must conform to MIL-H-5606 and use of the Mobil Aero HFA is recommended.)
3. Carefully pump oil into hydraulic system until 15 psi back pressure is detected, or until lever or hydraulic ram is seen to move at all, whichever occurs first.
4. Disconnect oil transfer system and replace dust cover.

#### NOTE

Make sure no air is pumped into system  
in performing above operation.

### 4.2.2 Brake Shoe Adjustment

The Brake Shoes should be gauged 5" (+1/8 - 0) apart with 1-5/8" between the gauge side of the running rail and the rubbing face of the inside brake shoe when car is in the retarder. Adjustment for wear of brake shoes should be made when the gap exceeds 5-1/4".

### 4.2.3 Retarder Adjustment

1. Insert five (5) retarder gauges into place in retarder, placing one at each lever. Position gauge such that 1-5/8" wide leg fits between gauge of rail and inside brake shoe.

#### NOTE

Make sure that in placing gauge near retarder  
section ends, that gauge contacts shoe in that  
area where shoe is straight.

2. By adding or subtracting shims and adjusting bolt (M451017-1102), bring retarder section brake shoes into contact with the gauge, making sure that retarder is in "ready to retard" position.
3. After completion of Step #2, remove gauges.



4. After completion of Step #3, adjustment bolt (M451017-1102) should be able to be rotated but have no end play. Check to make sure this is true, tighten slightly if necessary.
5. Open retarder using bar or piece of pipe and check to see that retarder will open to 6" gap.
6. Close retarder and recheck adjustment.

#### 4.2.4 4-Way Air Valve (24V DC Operation)

Instructions for maintenance, parts, and other data pertinent to the 3/4" 4-way valves furnished with the Model 50B retarder (manufactured by Ross Operating Valve Company) are enclosed at the end of this manual. Parts for these units should be ordered directly from the authorized distributor, making certain the Part Numbers provided in this section are used, since some of the parts are specially made for these unit. Distributor's address is as follows:

Pennsylvania Controls Co., Inc.  
250 Meadowland Blvd.  
Washington, Pennsylvania 15301

#### 4.2.5 General

1. The retarder may be painted (the prime coated parts only) with a good grade of weather resistant paint such as OA-1054 (Armstrong Paint and Varnish Company).

#### CAUTION

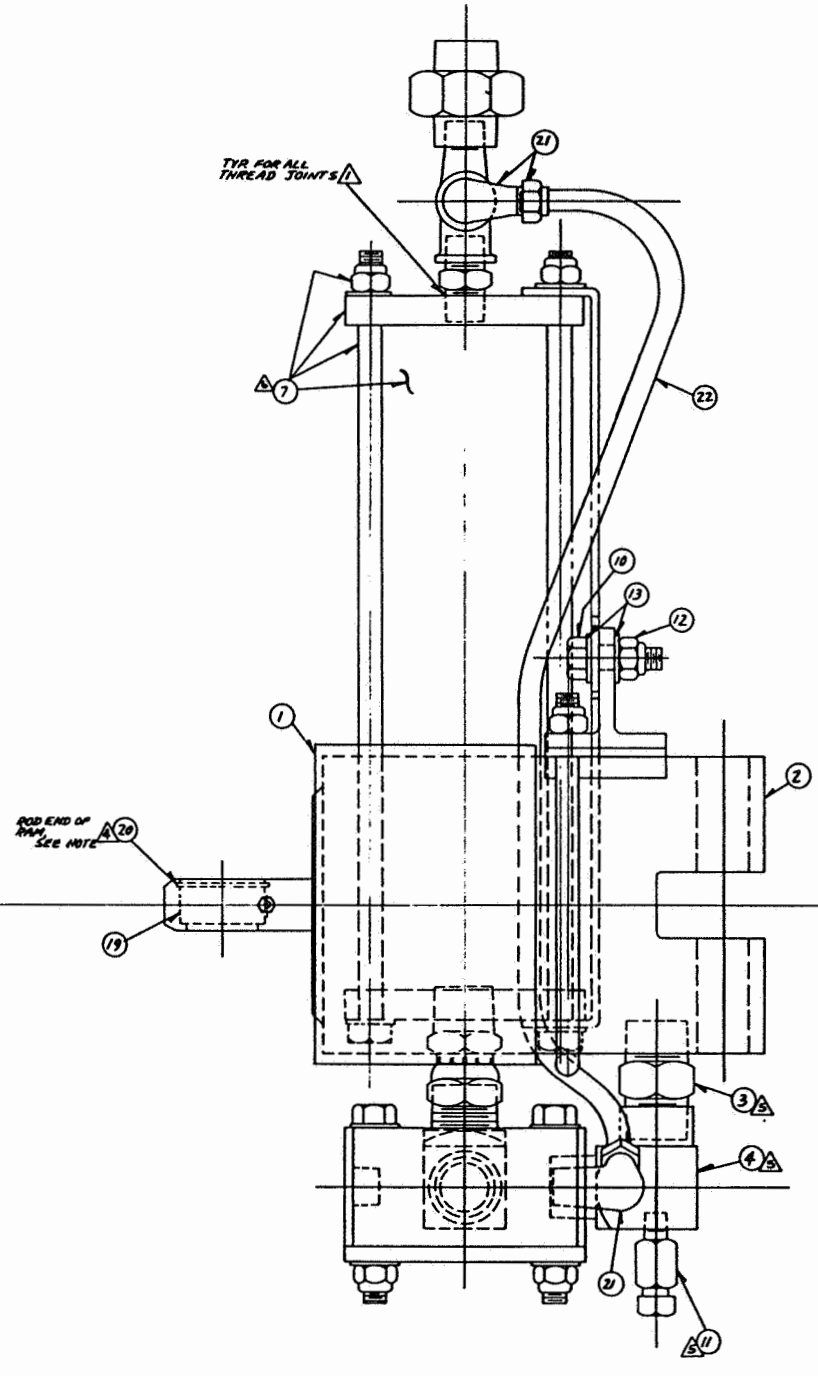
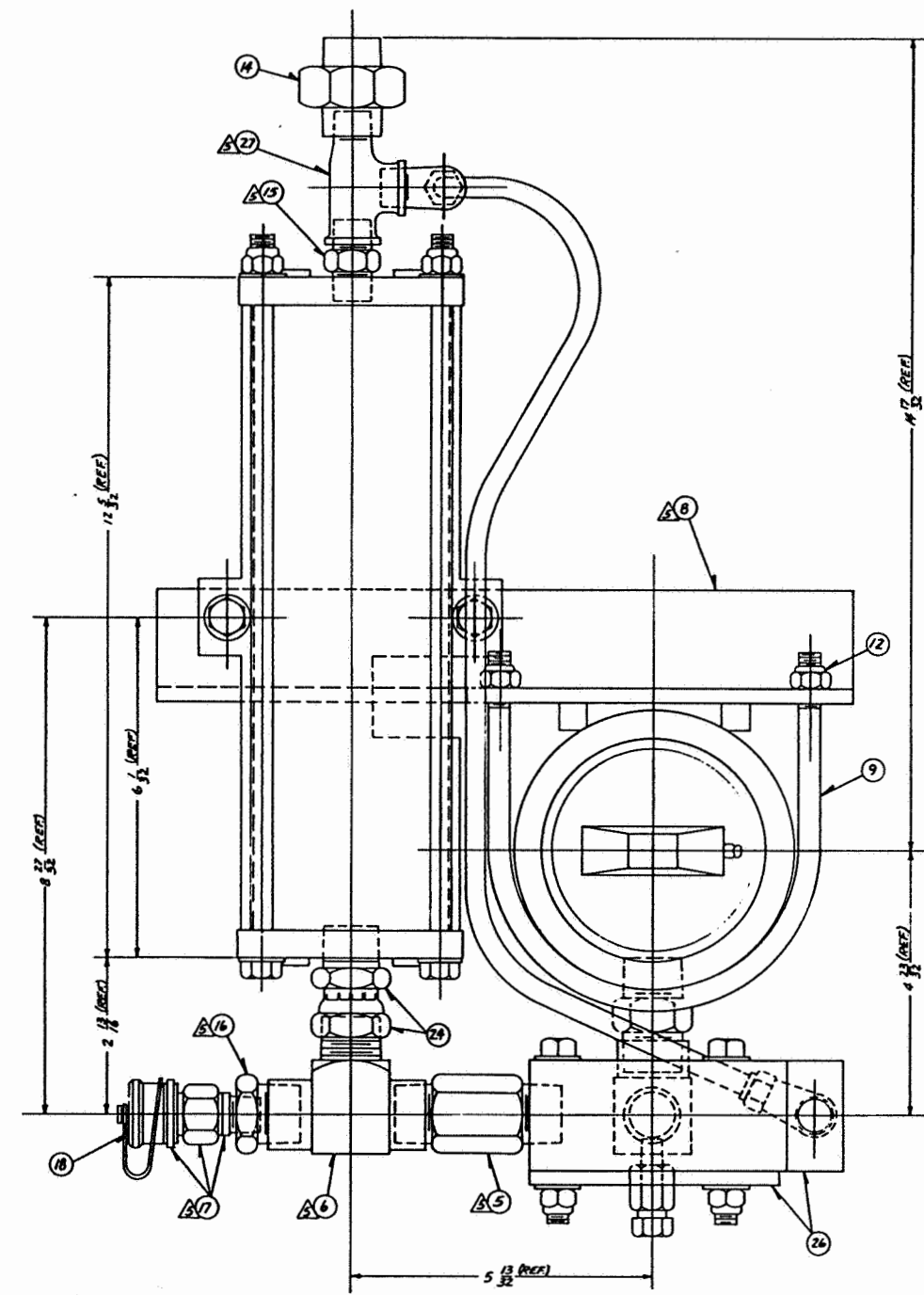
Special care should be taken to prevent the application of paint to the rubbing faces of the brake shoes, as this will seriously reduce the retarder effectiveness until the paint is worn off.

2. After 3 to 4 days of operation, the retarder should be reinspected. Any misalignment should be corrected and all nuts and bolts given a final tightening operation.
3. Hydraulic system is initially filled with hydraulic fluid conforming to MIL-H-5606 (Mobil Aero HFA is such a product); in replenishing or refilling hydraulic system, a MIL-H-5606 type fluid must be used and use of Mobil Aero HFA is highly recommended.





- ▲ USE TEFLON TAPE UA773088 ON ALL PIPE JOINTS TO SEAL CONN'S. APPROX. 60 LIN. IN. PER ASSY.
- ▲ WHEN ASSEMBLING, RETAINING RING TO BE ASSEMBLED SO THAT TAPERED EDGE CONFORMS WITH TAPER ON ROD OPENING.
- ▲ FOR REPLACEMENT OF ROD END OF RAM, FURNISH UN451017-7605, D451017-SH.76.
- ▲ APPLY MOLYKOTE METAL PROTECTOR TO SURFACES PER DRAWING D 451079-SH.52.
- ▲ J797771 CAN BE SUBSTITUTED FOR N451388-3301



QTY	ITEM NO.	DESCRIPTION	QTY	ITEM NO.	DESCRIPTION
1	1	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	2	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	3	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	4	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	5	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	6	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	7	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	8	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	9	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	10	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	11	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	12	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	13	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	14	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	15	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	16	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	17	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	18	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	19	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	20	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	21	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	22	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	23	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	24	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	25	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	26	1067440-0201 CAR RAM	1	1067440-02	1067440-02
1	27	1067440-0201 CAR RAM	1	1067440-02	1067440-02

- SYSTEM FILLING**
- SYSTEM TO BE CHARGED WITH HYDRAULIC FLUID. ITEM 23, UN04633 AFTER MECH ASSY IS FULLY COMPLETE.
- TURN PACKAGE ON ITS SIDE SO THAT BLEEDER VALVE ITEM 11 IS THE HIGHEST POINT IN THE HYDRAULIC SYSTEM.
  - REMOVE EXISTING BLEEDER VALVE AND POOR OIL INTO TAPPED HOLE BEING CAREFUL TO GIVE BUBBLES A CHANCE TO ESCAPE. FILL TO BRIM.
  - REPLACE BLEEDER VALVE.
  - INSERT SPECIAL FILLER PUMP ATTACHMENT.
  - OPEN BLEEDER VALVE ON FILLER PUMP ATTACHMENT.
  - PUMP SLOWLY UNTIL FLUID SPILLS OUT OF BLEEDER VALVE ON FILLER PUMP.
  - CLOSE BLEEDER VALVE ON FILLER PUMP ATTACHMENT.
  - CONTINUE TO PUMP FLUID INTO SYSTEM UNTIL PRESSURE READS 15 PSI. DURING FILLING MAKE SURE THAT RAM DOES NOT EXTEND AT ALL.
  - SLOWLY OPEN BLEEDER VALVE ON SPECIAL FILLER PUMP ATTACHMENT AND THEN RECLOSE.
  - DISCONNECT FILLING SYSTEM.
  - INSPECT AND TEST PER EU-6372.

FIGURE 3. ACCUMULATOR AND RAM ASSEMBLY, LOCATORS AND PARTS LIST

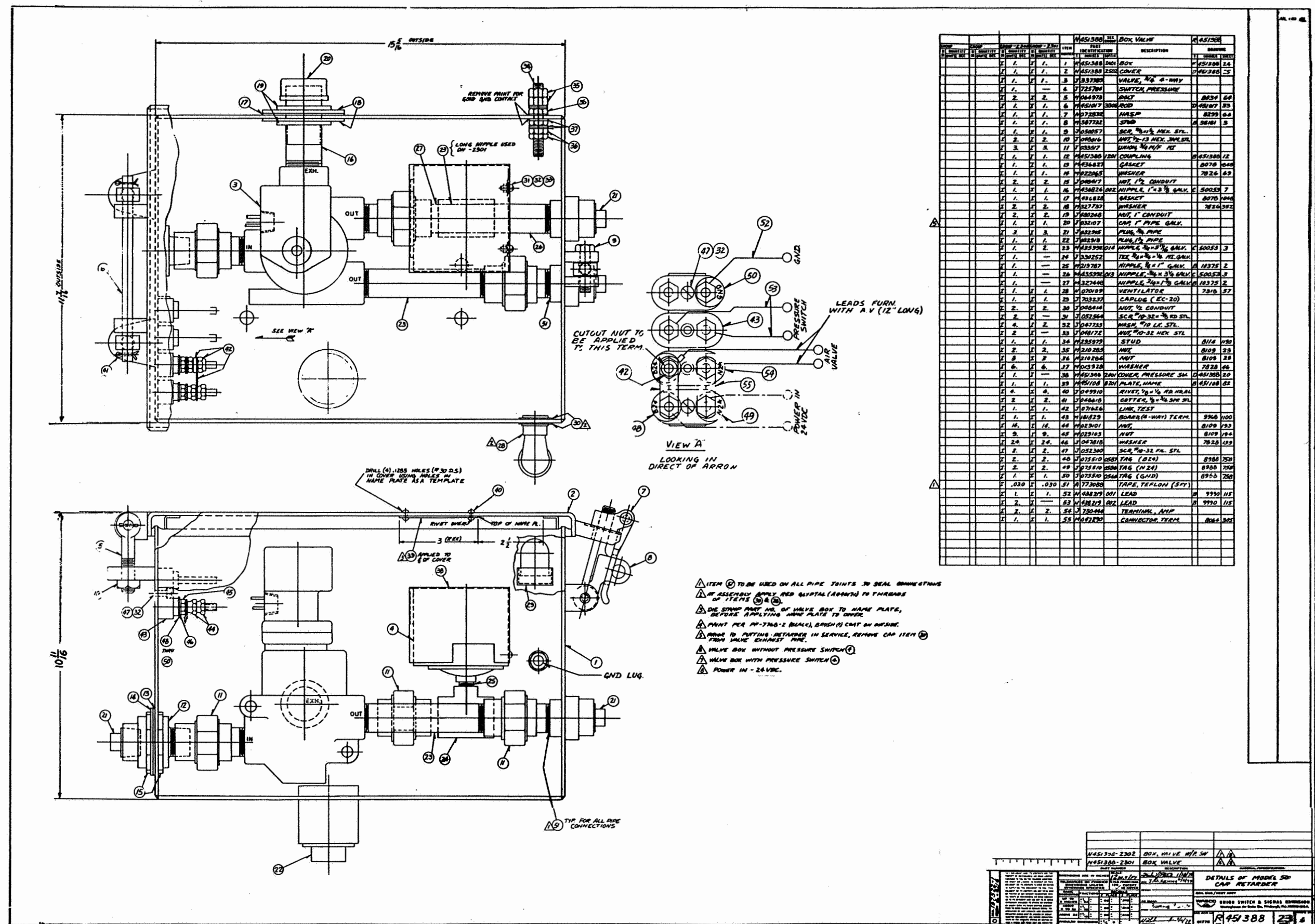


FIGURE 4. VALVE BOX, LOCATORS AND PARTS LIST

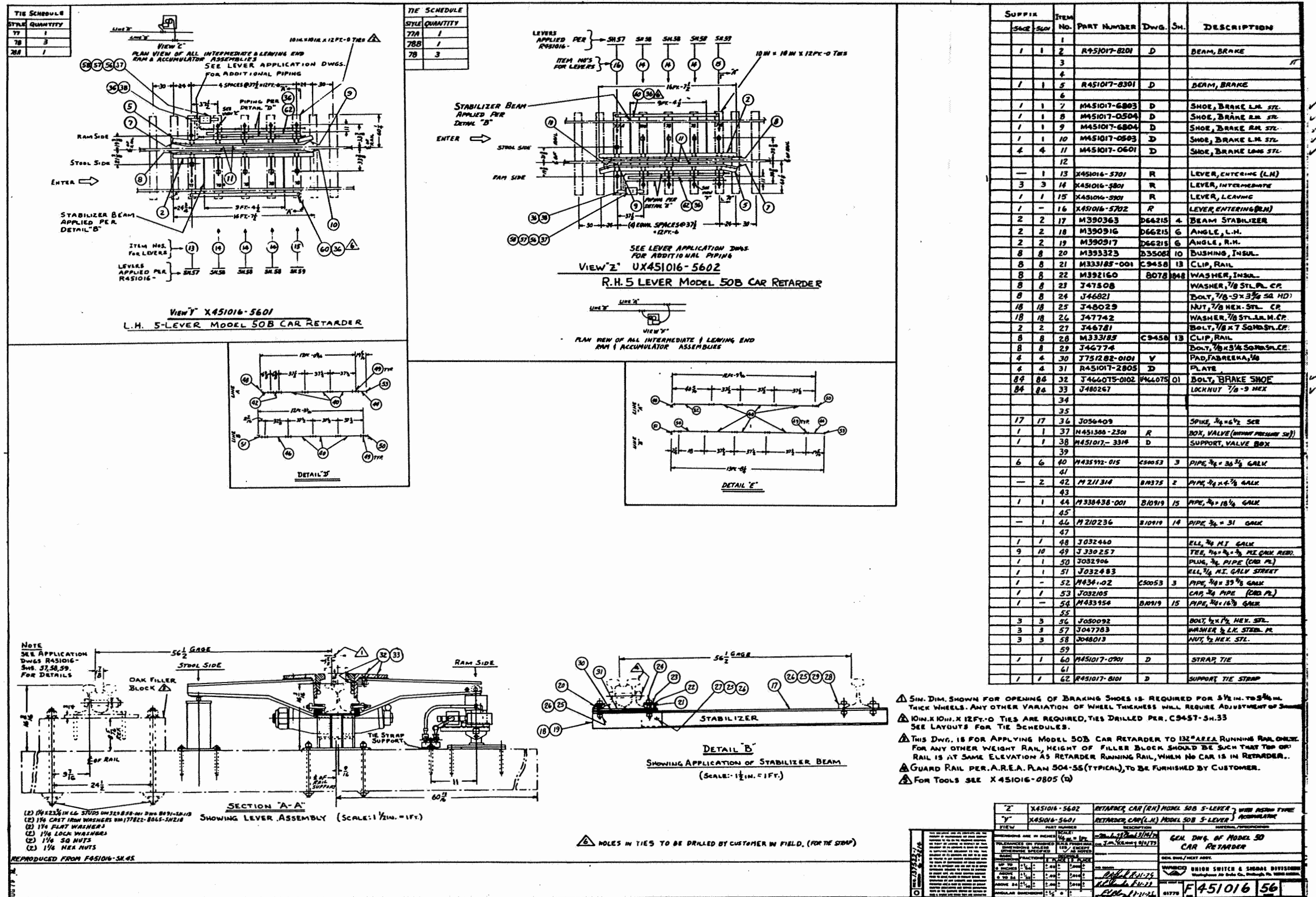


FIGURE 5. MODEL 50B RETARDER, LOCATORS AND PARTS LIST



PARTS LIST

for:

Entering Lever Assembly









PARTS LIST

for:

Intermediate Lever Assembly











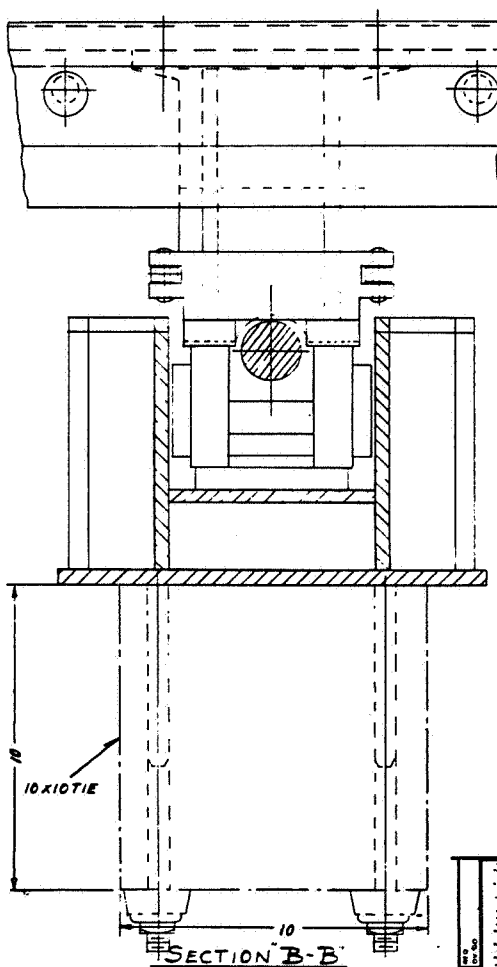
PARTS LIST

for:

Leaving End Lever Assembly

S U F F I X				ITEM	PART NUMBER	DWG.	SH.	DESCRIPTION
				265	UJ 50053			SCREW, 3/8 X 1" HEX CAP CR
				270	UJ 47779			WASHER, 3/8 STL. LK
				275				
				280				
				285				
				290	UM635 992-015	C50053	3	PIPE, 1/4 X 36 3/4 GALV.
				295	UM336 636-001	2109/9	15	PIPE, 5/8 X 18 1/2 GALV
				300	UJ330257			TEE, 3/4 X 3/4 X 1/2 SERVICE
				305				
				310				
				315	UJ32906			PLUG, 3/4 PIPE (CND PL)
				320	UJ32105			CAP, 3/4 PIPE (CND PL)
				325	▲			SHOE, BRAKE
				330	▲			SHOE, BRAKE
				335	▲			BEAM, R.H. BRAKE
				340	▲			BEAM, L.H. BRAKE
				345	▲			SUPPORT TIE STRAP
				350	UJ466075-0102	V466075	01	BOLT, 7/8 X 3 1/4
				355	UJ480267			LOCKW, 7/8 X HEX STL
				360				
				365	UJ56409			SPIKE, 3/4 X 6 1/2 SC.
				370				
				375				
				380				
				385				
				390				
				395				
				400				

S U P P L Y		ITEM	QTY	DESCRIPTION
NO.	QTY	ITEM	QTY	DESCRIPTION
1	5	SEE OTHER TAB	D	SUPPORT, RAIL
2	10	SEE OTHER TAB	D	BACKET, RAIL BEARING
1	15	UR451388-0201	F	LEVER
1	20	UR451388-0102	F	LEVER
1	25	UR451017-0809	D	STOOL
1	30	UM451017-1102	B	BOLT
2	35	UJ475114-0101	V	WASHER
1	40	UJ480188		NUT, 2 1/4 EL. STL.
1	45	UM451388-2701	R	ACCUMULATOR/RAM ASS'Y
1	50	UM451017-2108	D	PIN
2	55	UM451017-2201	D	SPACER
2	60	UJ48623		COTTER, 1/8 STL.
1	65	UJ463130		BOLT, 7/8 X 5 1/2 HEX STL. GR. B
2	70	UM451017-2206	D	SLEEVE
1	75	UJ47742		WASHER, 7/8 STL. LK. CP
1	80	UJ48029		NUT, 7/8 HEX STL. CP
1	85	UM451017-7701	D	PLATE, BASE
1	90	UM451017-7801	D	PLATE, RAM MFG.
8	95	UJ56409		SPRINT, 3/4 X 6 1/2 SC.
4	100	UM451017-5501	D	WASHER, ADJ.
4	105	UJ47503		WASHER, 1/2 STL. PL. CP
4	110	UJ47769		WASHER, 1/2 STL. LK. CP
4	115	UJ50095		SCREW, 1/2 X 1 1/2 HEX STL. CP
4	120	UM386877	B35045 2	STUD, 3/4 X 14 3/4
4	125	UM199406	B065 206	WASHER, C.I.
4	130	UJ48026		NUT, 1/2 HEX STL. CP
4	135	UJ47772		WASHER, 3/4 STL LK CP
4	140	UJ48223		NUT, 3/4 SQ STL CP
QTY PER OTHER TAB	145	UM451017-7506	D	SHIM, 1/8
4	50	UM73296	B332 49	WASHER
4	55	UJ48133		NUT, 1/2 EL. STL.
1	160			
1	165	UJ033737		UNION 3/4 GALL. M. W.F.
1	170			
1	175			
1	180			
1	185			
1	190			
2	195	UJ32420		ELL. 3/8 X 90" M.I. GALV. ST.
1	200	UJ75230	B3046 18	HOSE, 3/4 AIR (15' LONG)
1	205	UJ75275-0103	V	HOSE, 3/4 AIR (21' LONG)
1	210			
1	215			
1	220			
1	225			
1	230			
2	235	UM451017-2804	D	CLAMP, PIPE
1	240			
1	245			
1	250			
1	255			
1	260			
1	2604			



⚠️ FOR PART NUMBERS OF ITEMS MARKED ⚠️, SEE GEN DWS P05016-SHOW OT

⚠️ 5" DIM SHOWN FOR OPENING OF BRACE SHOE IS REQUIRED FOR 5/16" B. WHEEL THICKNESS. ANY OTHER VARIATION OF WHEEL THICKNESS WILL REQUIRE ADJUSTMENT OF SHIPS

⚠️ ALL MAT'L SHOWN ON THIS DWG. CAN BE APPLIED TO BOTH A & L.M. CAR RETARDERS

[illegible]

[illegible]

FOR REF ONLY  
ITEMS CALLED FOR  
ON GEN. DWG  
ITEMS ARE MARKED ☐

SEE LAYOUT DWG OF COMPL CAR RETARDER FOR

- ③ PIPING FOR R.H. CAR RETARDER.
- ④ PIPING FOR L.H. CAR RETARDER

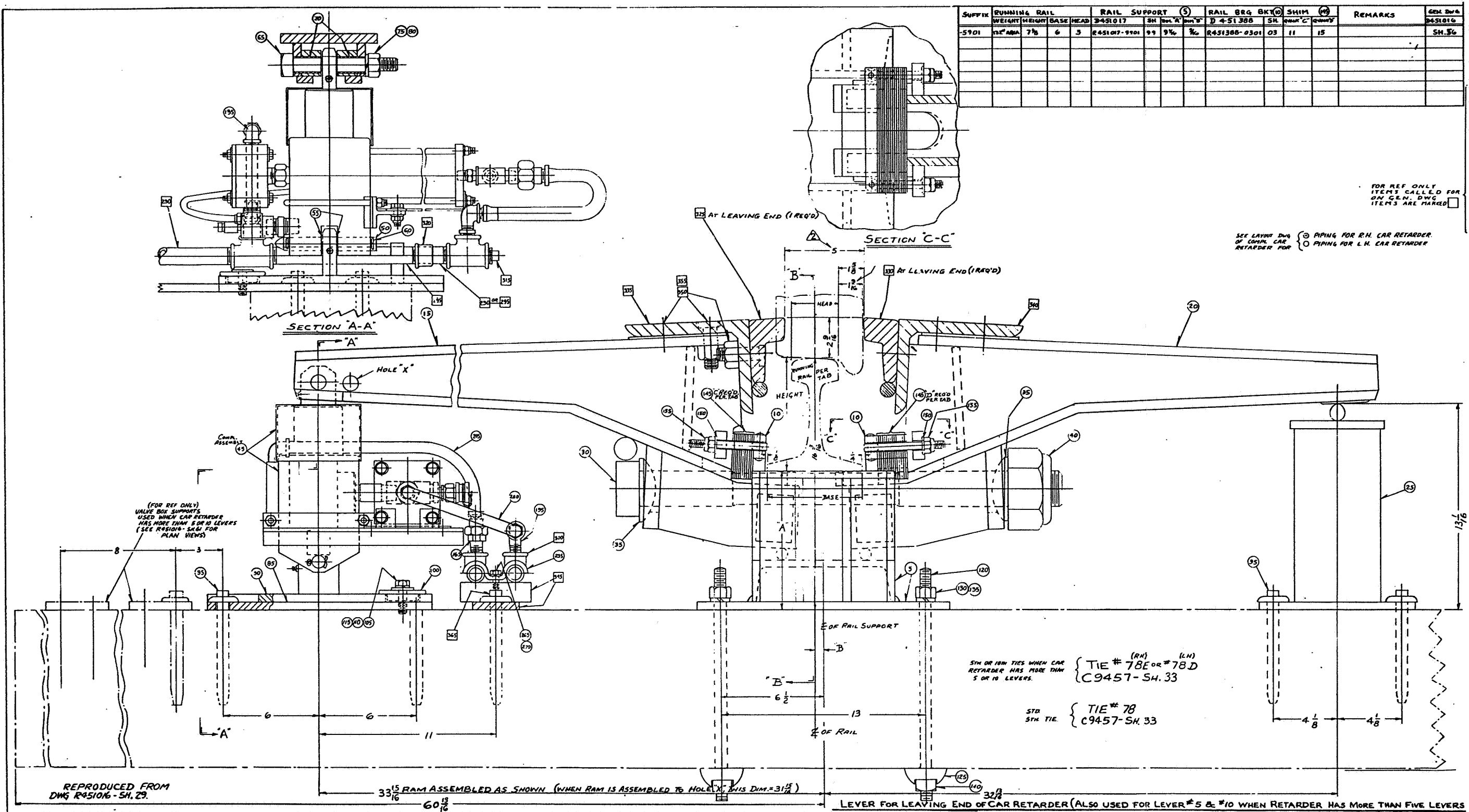


FIGURE 8. LEAVING END LEVER ASSEMBLY, LOCATORS



PARTS LIST

for:

Lever #6 Assembly



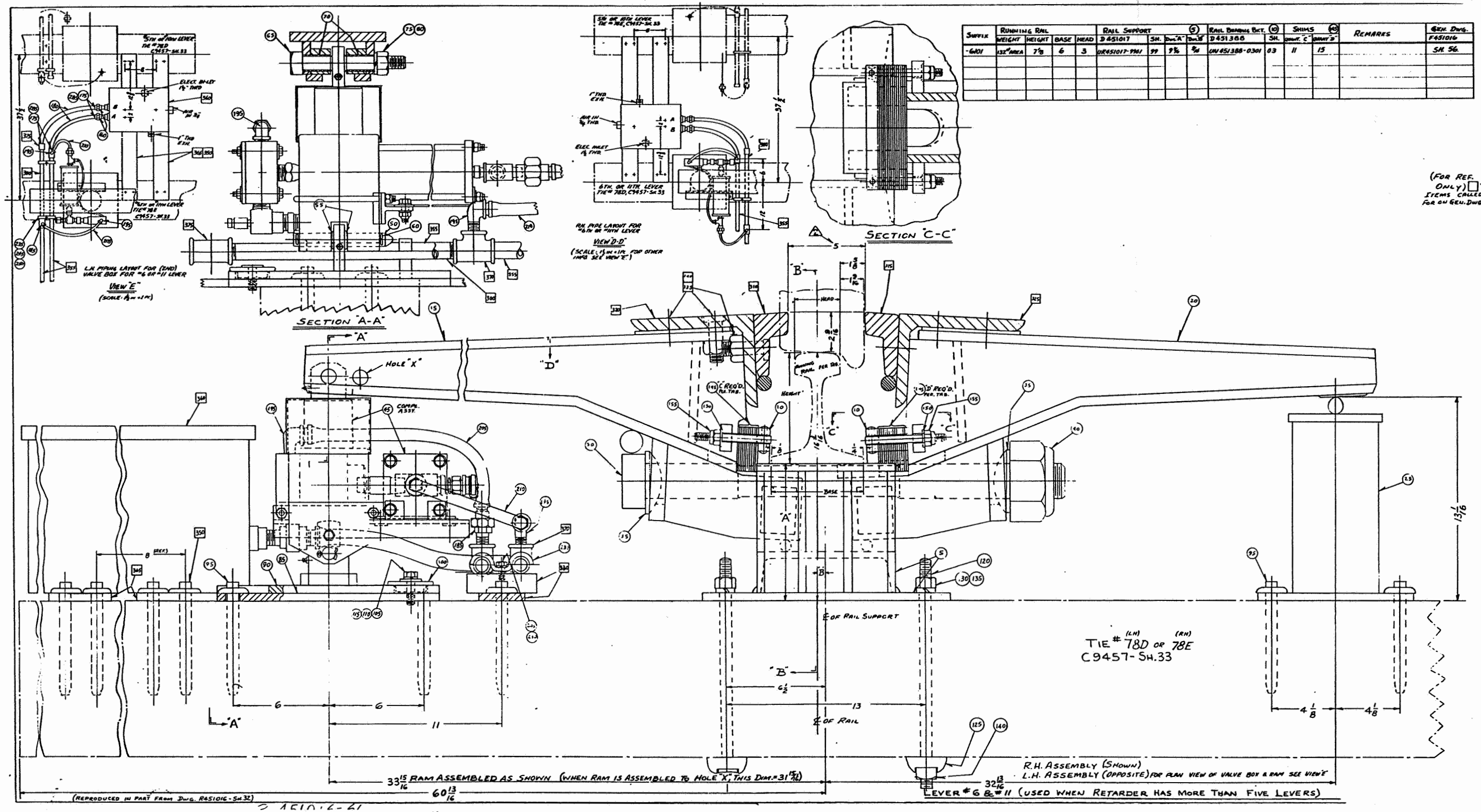


FIGURE 9. LEVER #6 ASSEMBLY, LOCATORS





PARTS LIST

for:

Intermediate Lever Assembly (with helper springs)



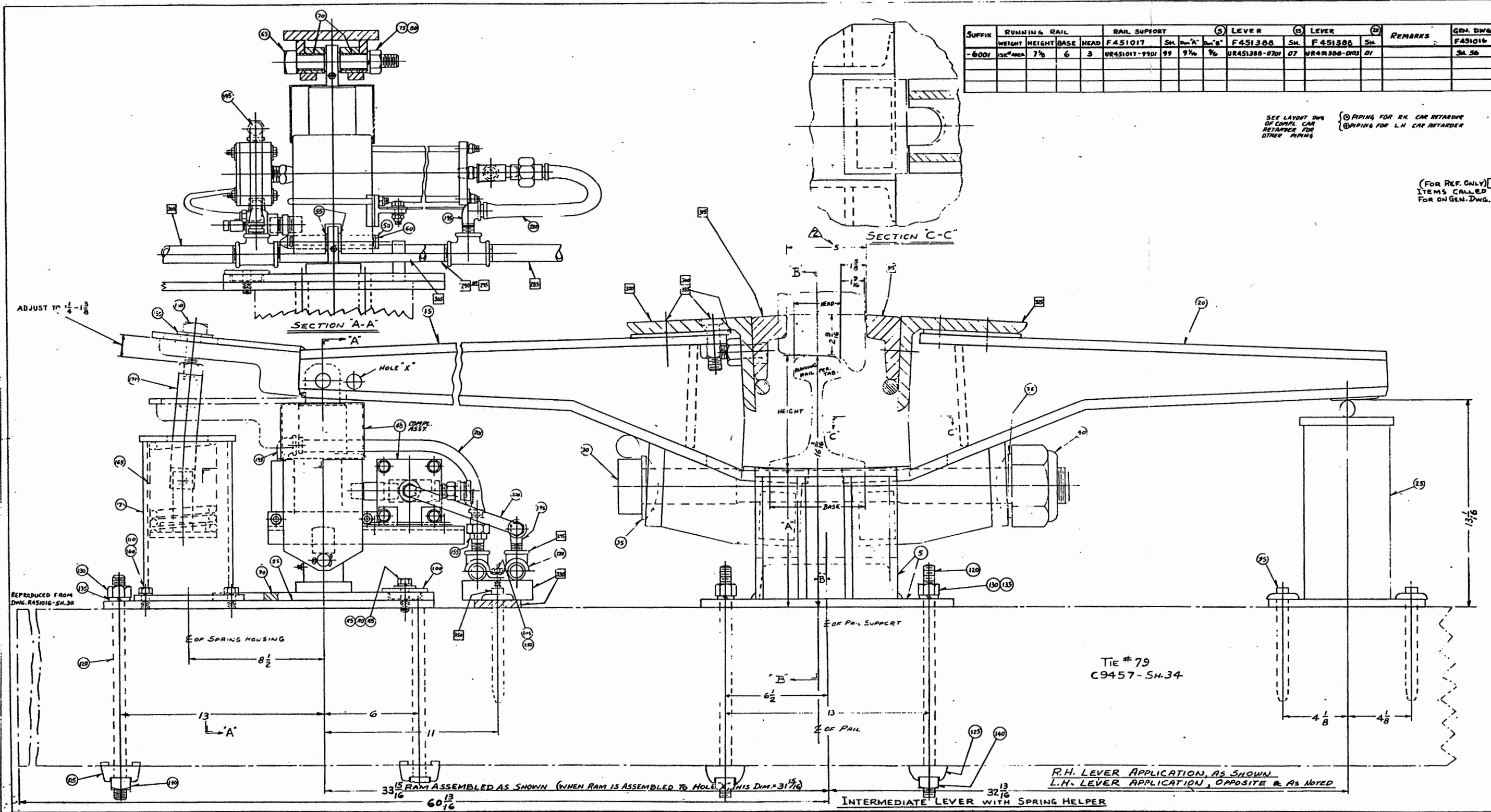


FIGURE 10. INTERMEDIATE LEVER ASSEMBLY (with helper springs), LOCATORS





## SECTION V SPECIAL TOOLS

### 5.1 LIST OF TOOLS

The following tools are required for the disassembly and reassembly of the exhaust valves for inspection and cleaning.

3/16" Hex Allen Wrench (Long)  
1/4" Hex Allen Wrench (Long)  
#12 Waldes Convertible Truarc Pliers

No special tools are required for routine maintenance of the valve.

### 5.2 USE

1. The 3/16" Allen Wrench is used to remove the pilot and solenoid assembly from the valve body. It is also used to remove the end plug from the valve body.
2. The 1/4" Allen Wrench is used to remove the adapter from the valve body.
3. The Truarc Pliers are used to remove the retaining ring holding the insert assembly in the pilot and solenoid assembly.

## SECTION VI PARTS LIST

The parts list that follows is a tabulation of the assemblies and kits that may be necessary to maintain this exhaust valve. This 3/4 inch, four-way valve may be ordered as a complete unit from:

Union Switch & Signal  
P.O. Box 420  
Pittsburgh, PA 15230-0420

However, parts for this unit should be ordered directly from:

Pennsylvania Controls Co., Inc.  
250 Meadowland Blvd.  
Washington, Pennsylvania 15301

Make certain that the part numbers provided in this section are used, because some parts are specially made for these units.

Individual parts for this valve are no longer available, but "kits" are provided in lieu of individual parts. Table 6-1 shows the earliest version (#2776B5941) to the current version (#2176A5909) which is underlined, and projected horizontally is the appropriate sub-assembly or kit.



Table 6-1. Sub-Assembly/Kits

Ross Valve #	Pilot Assembly	Solenoid	Pilot Ser. Kit	Valve Body Kit	Seal Kit
2776B5941 <u>2176A5909</u>	W744H79 <u>W744H79</u>	326F04 <u>265B04</u>	643K87-A <u>643K87-A</u>	265K77-J <u>265K77-J</u>	508K87-K <u>263K77-K</u>

Column 1 - Shows the Ross number from the earliest version to the current version. All complete valves are 100% interchangeable.

Column 2 - The current Pilot #W744H79 is 100% interchangeable on all earlier versions.

Column 3 - The earlier Solenoid #326F04 will fit in all Pilots including the current version; however, the current Solenoid #265B04 fits in the current Pilot only. The 326F04 will continue to be made available.

Column 4 - The current Pilot Service Kit #643K87-A is 100% interchangeable in all Pilots.

Column 5 - The current Valve Body Kit is 100% interchangeable in all earlier versions. Installing this complete kit automatically updates the valve body to the current version.

Column 6 - Gasket and Seal Kits must be ordered according to the valve body version number, unless the valve has been updated to the current version by using the current Valve Body Kit.

#### EXAMPLE

If you are working on 2776B5941 version that still incorporates the old parts, the appropriate Seal Kit would be 508K87-K. If however, you are working on 2776B5941 version that incorporates the current Valve Body Kit 265K77-J, the appropriate Seal Kit would be 263K77-K.

Table 6-2. Parts List/Kits (See Figure 6-1)

Item	Description	Assembly/Kit Part No.
1	Pilot Assembly	W744H79
2	"O" Ring	643K87-A or 263K77-K
3	Adapter	222B25
4	Gasket	263K77-K or 265K77-J
6	Valve Body Assembly	992H78
11	Cover	457B89
12	Solenoid (Latest)	265B04
12	Solenoid (Earlier Version)	326F04
13	Cushion	643K87-A
14	Retaining Ring	643K87-A
15	Insert	643K87-A
16	"O" Ring	643K87-A
17	"O" Ring	643K87-A
18	Spring	643K87-A
50	Valve Body Assembly	992H78
61	"O" Ring	265K77-J or 263K77-K*
62	"O" Ring	265K77-J or 263K77-K*
64	Pinton Poppet /Spacer Assembly	265K77-J or 263K77-K*
65	Seal	265K77-J or 263K77-K*
66	Poppet	265K77-J
67	Spring	265K77-J
68	"O" Ring	265K77-J or 263K77-K*
69	End Plug Assembly	265K77-J
70	Piston/Rod Assembly	265K77-J
71	Seal	265K77-J or 263K77-K*
72	Poppet	265K77-J
73	Spring	265K77-J
74	"O" Ring	265K77-J
75	"O" Ring	265K77-J
76	Seat Plug Assembly	265K77-J

\* Seal Kit 263K77-K is for current version only.  
See Table 6-1 for appropriate kit for a  
specific earlier version.

VALVE NO.

2176A5909

2776B5941

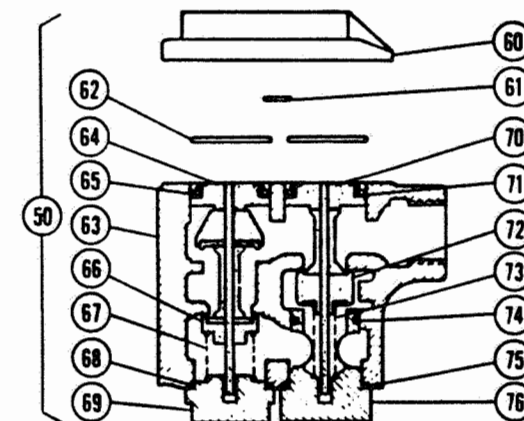
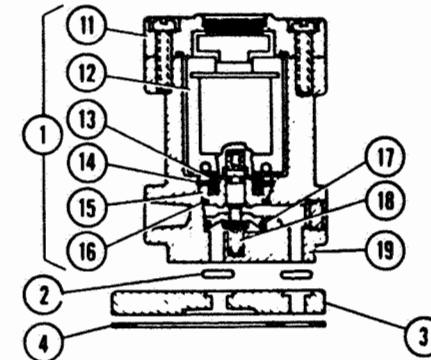


Figure 6-1  
Valve Repair Parts Location



# MAINTENANCE NOTES

## FILTERS, LUBRICATORS AND VALVES

**Supply Clean, Lubricated Air.** An efficient filter and lubricator should be installed in the line supplying air to the equipment. The filter should be a unit that will remove water and other contaminants in an air system. Accumulated liquid should be drained often from the filter. If a portion of your system is in an area that does not get frequent routine maintenance, or if there is considerable water in your air system, you should consider a filter which drains itself automatically when its water level reaches a given point. The lubricator used should deposit oil in the system at low air flow rates as well as at high air flow rates. Proper lubrication is achieved when all moving parts in the air system are receiving enough oil to maintain a thin coat of high grade lubrication. This is necessary to insure long life for the equipment.

Following is a list of air line lubricants we have found suitable:

1. Citco ..... Pacemaker #10
2. Esso ..... Rycon Industrial Oil #21
3. Mobil Oil Corp. .... Almo #1
4. Mobil Oil Corp. .... Vectra (Light)
5. Mobil Oil Corp. .... DTE (Light)
6. Shell ..... Tellus #15
7. Standard Oil Co. .... American Industrial Oil #15
8. Standard Oil Co. .... American Industrial Oil #21
9. Texaco ..... Regal Oil A.R. & O.

Generally speaking, any light bodied mineral or petroleum base oil with a 180°F. to 220°F. aniline point and

an SAE #10, or lighter, viscosity equivalent will prove compatible with the Buna N sealing compounds used in Ross Valves. Such oils should also atomize sufficiently in most lubricators so to provide adequate lubrication of the moving parts of an air system.

**Normal Service.** In most cases, it will not be necessary to remove the valve from its installation for servicing. Normally, all that will need replacing are the seals and possibly the springs. A periodic check of actuators and locking devices for wear is recommended.

**In Some Services Valves Require Periodic Cleaning.** Under certain operating conditions, the valve ports and the internal channels of the valve may build up a deposit of varnish and/or foreign materials. Over a period of time, these deposits will contribute to a sluggish action and possibly a malfunction. It is suggested that a periodic cleaning of valves be established should this condition exist. (As to the cause of varnish, it sometimes results from faulty rings in the air compressor which may allow oil to get into the compression chamber. Heat in that chamber can cause the oil's chemical breakdown.)

## SOLENOIDS

**Keep Relay Contacts Clean.** Dirty or pitted contacts can cause irregularities in the electric power supply which can cause solenoid burn-out.

**Moisture or Heat In Solenoid Enclosure.** Under normal temperature and humidity conditions, a standard solenoid should give no problems. Excessive moisture, condensation or heat in the solenoid enclosure can be harmful and shorten coil life. Avoid subjecting standard solenoid valves to such conditions. Should ambient temperature exceed 120°F. or abnormally high humidity condition exist, contact Ross for suitable solenoid coils.

